

Power Analysis and Bayesian Data Analysis in Cross-National Multi-Lab Studies: The Experience of the Many Smiles Collaboration

Multi-lab studies, studies that involve different labs in many countries, are a powerful tool to increase the external validity of our results - they increase cultural diversity - and for testing hypotheses whose effect sizes could hardly be studied in a single lab. However, an international collaboration also implies potential sources of heterogeneity in the effect studies, which poses novel challenges to the experimenters and the data analysts who want to properly plan their study through a power analysis while trying to take such heterogeneity into account.

I will discuss conducting power analysis and Bayesian data analysis for the 'Many Smiles' multi-lab study, a cross-country adversarial collaboration to severely test the facial-feedback theory across countries and operationalizations.

First, I will describe the statistical approach and the challenges faced in conducting a simulation-based power analysis within a multilevel modeling framework, and how, together with the rest of the team, we made some assumptions that guided our modeling strategy. Secondly, I will show how we conducted Bayesian data analyses following the data collection, the practical and theoretical challenges posed by this approach, and the added value carried by a Bayesian approach to the conclusions drawn from this approach. Finally, I will reflect on what this experience taught me about what it means to falsify a psychological theory in the context of psychological science.

If you're submitting a poster, would you be interested in giving a blitz talk?

If you're submitting a symposium talk, what's the symposium title?

The Multiverse of Multi-labs. Methodological and Statistical Aspects of Multi-Lab and Multiverse Studies.

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

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